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AN OYSTER-ISLAND.

HAVING been much gratified and instructed by my visit to the mussel-farm of Esnandès,* I resolved to cross to the Ile de Ré, in order to view and obtain information about the celebrated oyster-farms of that island, which have of late years attracted the attention of all who take an interest in the economy of the fisheries. Whilst on the mussel-grounds, I saw the Ile de Ré a few miles off in the fierce waters of the Atlantic. It appeared a small place at the distance I was contemplating it from; and I thought it could not hold a great many oysters, even were its entire surface covered with the tempting mollusc; but next day, as the steam-boat puffed its way over the strait which divides the island from the mainland, and which is locally known as the Pertuis Breton, the *île* gradually grew in size, till, on landing at St Martin, I found it to be a place of very respectable proportions. It is, I should guess, about twenty miles in length, and on the average three miles in breadth.

Arriving at about full tide, I had to wait for a couple of hours before the oyster-beds could be seen to advantage; but I whiled away the time by conversation with one of the oyster-farmers, from whom I obtained some interesting information about the peculiar trade of the island. My host, who was a vendor of salt, had been on the Ile de Ré all the days of his life, and was familiar with the various stages of its oyster-commerce. At one period, he said the oysters grew *au naturel* on the submerged rocks and stones that skirt the island, and twenty years ago, they were tolerably plentiful; but when steam-boats were introduced, and the other resources of quick travel came to be developed, oysters began to be more largely consumed, and the beds, in consequence, were spoliated faster than nature could supply them—a condition which lasted a long time, since for ten years or so, the only oysters that could be obtained on Ré were those grown by the

saltmakers for their own use, which, however, were of excellent flavour.

About nine years ago, in March 1858, the present era of oyster-cultivation was begun; it was inaugurated by an old soldier named Bœuf, a Chevalier of the Legion of Honour, who now follows the business of a stone-mason on the island. It is thought by some of the islanders that M. Bœuf must have acquired his knowledge of oyster-culture by accident. He gives out himself that he had conceived a theory of an oyster-garden twenty years before he began his present farm. His ideas on the subject, he says, were taken from nature; and he tried oyster-culture privately for some years before he applied for a concession of public ground. At first, he laid out a very small *parc*—it was only twenty yards square—in the style a working-mason might be expected to do, the wall being composed of sea-stones. The plan he adopted to stock his first *parc* was to gather together all the stones he could find on the natural beds upon which any oysters had fastened, and these he laid down within his enclosure, in the hope that they would yield spat in the warm months. He was not disappointed, for in less than a year, he found that he was possessed of handsome crops of young oysters. His first sales were made in 1860, when he sold oysters to the amount of one hundred and fifty francs. He then doubled the extent of his ground; and next year, he sold four times the quantity of oysters, realising by the sale a sum of nearly thirty pounds. The following year, his sales were a half larger, and his *parc* again largely increased. Thus, in the course of a season or two, he found he had hit on an easy way of supplementing his income; and his success, the news of which soon spread far and near, became so catching, that many of those residing on the island, particularly at Rivedoux, where Bœuf resides, began to cultivate oysters on their own account, or, at anyrate, to take an interest in the business of those who did. In fact, the moment it came to be generally known that by growing oysters—and that oysters could be grown just like potatoes, Bœuf had demonstrated—good hard

* See *Journal* for September 22, 1866.

money could be obtained, there began an excitement on the subject of their culture, which has not yet subsided. At once, almost, two hundred concessions of ground were made to persons anxious to grow oysters; then five hundred additional grants were made; and now, as I was told during my visit, there cannot be less than five thousand *parcs* and *claires* on the island; while Boeuf's own *parc* has been extended from the original twenty yards to a surface sixty times that extent. I could not ascertain, with anything like precision, the number of *parcs* and *claires* that have been constructed on the island, not having had an opportunity of consulting with any of the authorities; but a farmer at Rivedoux, whom I met at the hotel in St Martin, estimates the number at more than five thousand; and he thinks there cannot be a less stock than four hundred million of oysters of all ages at present on the island! Many of the *parcs* have a stock of from fifty to seventy thousand oysters; and there is no end of offers to buy whole crops or rows of stones, crowded with oysters, just as they stand. In the Rivedoux district, which is not large, the oyster-sales must amount to some thousands per annum, and the amount is largely increasing year by year, as the various crops become marketable.

It was not till the tide had ebbed sufficiently to leave the *parcs* and *claires* pretty dry, that I began to realise the gigantic nature of the industry that had been created on the island. Far as the eye could scan, along the foreshore lay a vast series of oyster-beds, containing oysters in all stages of growth, from the size of a small seed to the mature animal ready for the ensuing winter's market. Some of these oysters were lying with beautiful regularity on both the boundary and stock dikes of the farms; others were crowded and deformed on substances they had been allowed to grow upon without being thinned. I could easily see, without much investigation, that the great triumph achieved by the oyster-farmers of Ré was in forcing the oysters to grow on places that nature had never intended for the carrying on of such work—the foreshore in many places being, as at Esnandes, a vast series of mud-beds. In fact, a glance at the imperial *parcs*, which are designedly situated on one of the worst places of the shore, in order to indicate what can be achieved by cultivation, shewed that many of the beds must have been formed by very hard labour—the spots of ground being totally different from those chosen by the oyster when left to itself, for when the spat falls upon mud it never grows. The *parcs* and *claires* are very primitive, and as a builder would say, have no look about them. I certainly did not expect architecture, but I looked for engineering. All one can see, however, is mere labourer's work. As Boeuf began, so have they all carried on—a *parc* being formed by gathering together the stones of the foreshore, and if the stones be all used, by obtaining more by blasting the adjacent cliffs. It is all the better, perhaps, that no elaborate engineering is necessary, and that a man, aided by his family, can put a boundary round his farm in a few days after it is conceded to him.

The oyster-industry of the island is conducted in the most homely way; the men, women, and children to whom the *parcs* belong do all the work, which is totally different from the round of labour at Whitstable, neither boats nor dredges being required for the working of the Ré beds,

because, being accessible at low-water, they are easily managed by means of hand-labour; and when the beds do become accessible, it is pleasant to see all hands at work—the husband and wife, the children, even to the youngest, assisting, arranging the beds, turning over the stone spat-receivers, thinning the tiles of superfluous stock, or carrying away oysters from the *parcs* where they are grown to the mud *claires* in which they are to be fattened for the market.

In forming a bed, the oyster-farmer has to excavate as much of the mud as he can from the sole of his allotment, after which he must construct an artificial bottom of stonework suitable for the adherence of the spat, for there is no natural *cultch*—that is, old oyster-shells—on these farms. The bottom of the *parc* should be so constructed as to form a drain for the mud which is inevitably washed in with each tide, and the stones for the reception of the spat should be laid together in the form of the letter A. The spat in due season carried in by the tide, affixes itself on the inner side of the stones, which after a time are reversed, so that the oysters may be attended to, and a fresh surface be presented for the reception of more spat, which is obtained annually.

The supply of spat is twofold on this island: it comes from the natural oyster-beds of the coast, and also from the artificial beds that have been constructed on the foreshores. Some of the *parcs* are totally uncovered at the ebbing of the tide, but others again are so constructed as to hold the water; these are bounded with two parallel rows of stones, the interval within the rows being filled with the mud which is taken out of the *parc*. The cost of constructing a *parc* is about sixteen hundred francs, but one of the government *parcs* cost a hundred pounds sterling. In many of the *parcs*, convex tiles have been laid down for the reception of the newly-spatted oysters. These tiles are the invention of a scientific gentleman, who lives at St Martin, on the island, and many of them can be used again and again, as they are coated with a cement that can be peeled off as soon as the young oysters are a little grown. The covering of the tiles being removed, they are again recoated, and made ready for use. There are many varieties of these tiles, and they answer admirably, either with or without the coating. Wooden hives of various kinds have also been constructed for the purpose of attracting the spat; indeed, there is no end to the various contrivances that have been invented to receive the seed of the oyster, for it is the primary condition of that animal's growth that it must have a holding-place. There is no breeding-ground, however, like the natural *cultch*; but of course, as you cannot have old shells on newly-formed breeding-beds, you must find out the next best thing as a substitute.

The trade in oysters on the Ile de Ré is much diversified—some only keep their crops till the oysters are a certain age, or rather till they attain a certain size, and then they sell them to those who have *claires*, or fattening ponds, and in these the oysters are kept till they are ready for the market. A great many oysters are sold both by the farmers of the Ile de Ré and those of Oléron for the purpose of being *greened*, which process is largely carried on at Marennes, on the river Seudre. There is a great demand all over the country for the green oysters of Marennes, and as a consequence, there is a large trade carried on in them. The

flavour of these green oysters is very delightful, and the green colour is natural to certain places of the French coast.

The following figures will give some idea of the success of oyster-farming as carried on at Ré; I obtained them from an oyster-merchant at Bordeaux. A farm of three growing parcs, which cost about forty pounds to construct, and was originally stocked with a few thousands of tolerably sized oysters, for which thirty pounds sterling were paid, yielded in two years a sum of fifty-four pounds for oysters sold to be greened at Marennes; and at the time of the sale, every stone and tile of the parc was so incrustated with one and two year-old oysters as to render them innumerable. In the following year, 1865, the proprietors—it was a family concern—made such sales as completely to reimburse all the original outlay, pay for all the labour of the farm, and leave a good profit in addition.

There is a great variety of oyster-ground on the island—there are the five bays and well-sheltered creeks of the northern side, famous for spatting-parcs; then stretching away from Point Loix in the direction of Porte, there is excellent greening-ground for fattening any quantity of those particular oysters that are so dear to the gourmet—and justly so, for their flavour is exquisite. Most of the persons who have obtained grants of oyster-ground follow also some inland occupation, which they are well able to do, as they do not require to work more than an hour or two each day on their oyster allotments. The profits derived from these small farms are wonderful. On one of the smallest of them, I was told that a breeder, after lifting fifteen thousand oysters to stock a fattening-claire with, and after selling five hundred francs' worth, had still a large quantity left—a quantity for which he was offered a sum of twelve pounds; and yet he had only been three years at the business. Such success can only be obtained by cultivation. By leaving the oyster alone, and letting the spat take its chance of finding a holding-on place, I estimate that about nineteen-twentieths of the quantity spawned—and the quantity spawned has been enormously exaggerated—are lost, and of the remaining twentieth, only a very small percentage ever live to come to the table, and a still smaller percentage to become reproductive; hence the value of the nursing-parcs and fattening-claires: and even with these aids, the loss is enormous, for as yet, with all the adjuncts of science, the increase over the natural system is only fourteenfold.

Some positions on the island are far more favourable for spatting than others: it sometimes happens that, in a parc full of oysters, all the spat will be floated away, and fall on some neighbour's bed; but, as a general rule, the spat of a particular bed, or, at anyrate, of a particular district, is pretty sure to fall in that district. I had the pleasure of seeing a few thousands of tiny oysters that had evidently fallen within a fortnight: they were, when I saw them, about the size of pin-heads; but as the oysters of Ré grow with great rapidity, especially after being transferred to the claires, where they rest upon a bottom of mud or marl, they are soon ready for the market. I was astonished to learn that it did not take above thirty months to ripen the fish; and even before that period they become fit for the market.

'At what age does the oyster become reproductive?' I asked of one of the breeders.

'I have seen them spawn at the end of three years,' he replied—'and even sooner.'

'But how,' I asked, 'about the breeding-stock? If the oysters are eaten at the age of twenty months, or before they breed, will it not in time exhaust the supply?'

'O no,' was the reply: 'the oyster is so marvellously prolific, that half-a-dozen mothers could stock all the parcs on the île. There are men here who do nothing but breed and sell the stock, keeping plenty of breeding-oysters to supply their parcs.'

'But would it not be better,' I asked, 'if all the oysters on the island were to be allowed to breed at least once before being sold?'

'There are no means of insuring that. Although we all agree to certain rules, because we think them right for the general benefit of the trade, every man pleases himself as to when he buys or sells. Some people prefer to eat young oysters.'

'Then you think there is no danger of exhausting the supplies?'

'The success of the whole island is the best answer I can make you,' said the man: 'we go on increasing in prosperity, every year being better than the one preceding.'

'But the island was exhausted from overfishing once before,' I said, 'and may be again.'

'Never,' he said. 'We cultivate our oysters now the same as we do our vines or our corn.'

This word 'cultivate' is the key-note to the secret of a successful fishery, whether for oysters or salmon. I was naturally anxious to know what rules had been laid down, or what regulations had been devised for the government of the oyster-fisheries of the île. I found there was an oyster-parliament, as I may call it, in which all questions relating to the general requirements of the oyster-growers are discussed—as the best kind of receptacles for the spat, the easiest methods of getting rid of the enemies of the oyster, &c. For other purposes, the island is divided into four districts, and three delegates are appointed by each, in order to the proper transaction of business with government. A small tax is levied to meet such expenses as are common to all; and there is a sworn watchman provided by each community. In this way, the oyster has not only been the means of bringing wealth to the islanders, but it has also been the means of greatly improving their manners and morals.

So far all is *couleur de rose*; and there certainly is every evidence that oyster-culture on the Île de Ré is a successful way of making money; but there is always some concealed thorn: a large body of the oystermen of the island have a grievance; it is a rule that oysters must not be taken out of the parcs till they attain a certain size—an excellent rule, generally speaking, but as there is no rule without its exception, I found that it would be better if the law as to size was not enforced. The case is as follows. On some parts of the island, there is in some years such an abundance of spat, that far more oysters are developed than there is food for, and the result is, that as these oysters cannot at once be carried to the claires, a very large proportion of them perish; whilst if they had been put into the marly beds, they would have had such an abundance of food as would have fattened them in a short time for the market. Many of the oyster-breeders do not remove their oysters from

the parc to the claire; but that is a blunder; the oysters which are both bred and fed in the parc are poor in quality compared with those which have been transplanted. The parcs are not leased for any period, but are held at the will of the authorities, on payment of a very small rent; and many of the farmers have become wealthy by their speculations in oyster-buying. Altogether, the oyster-commerce of the island has a healthy tone about it; and the progress of its prosperity is most remarkable. I should say that a very large portion of the annual two millions of oysters required for the supply of Paris will in future be obtained from the Ile de Ré.

THE NIGHT-PASSENGER.

THE wilderness of vegetation that stretches for hundreds of miles in patches of forest, composed of gigantic gum-trees, gnarled oaks, and feather-foliaged wattle, across a portion of the Australian continent, had not for many months been traversed by the rugged tracks that led to the mines of Mount Alexander and Bendigo, before Yankee enterprise reduced the distance to a two days' journey. The leather-sprung coaches of America, with their teams of active horses, soon rendered the then arduous pilgrimage a very ordinary undertaking; and the emigrant who sought to reach the diggings quickly considered eight sovereigns economically spent in passing the weary miles of hills and ruts in well-driven and comfortably-appointed coaches. It was then regarded as a matter of course that there should be a stoppage at every place where water and brandy could be procured, where passengers might drink to new acquaintanceships, and horses be refreshed or changed. In the suffocating heat and thick dust of summer, or amid the plashing rains of winter, these coaches dashed on, piloted by men of much skill in the management of their teams. The speed rarely fell short of a sharp trot or canter, though past mammoth trunks or beneath heavy branches, that rasped the roof from time to time with a sharp clawing sound. The passengers were safely driven—a cool Yankee driver always at the ribbons, prepared for every emergency of the rough and dangerous road. By and by, as time grew more precious to the impatient spirits of the young metropolis, night-coaches were appointed to cover the distance while men slept, and land them in the golden districts with the least possible delay. Thus it was not long before 'Cobb & Co.' spanned the tracks to every settlement with their express wagons and troop of drivers. The night-coaches were driven by the most experienced, and usually fitted up with five large lamps, attached to that portion of the roof immediately above the driver's seat. It was curious to watch these conveyances careering through the darkness of the forest, like things of life; they could be seen for miles away glimmering and flitting among the boughs, or flashing their lamps upon the sombre tree-trunks, and laying a path of light before the horses in which every rut or fallen log became distinctly visible.

The time to which I refer was the most stirring

connected with the mines; bushrangers were frequent, and the shouts to the coachmen in the solitudes of the track were as likely to be followed by the presentation of revolvers as the money or gold-dust of the traveller anxious for a seat. It is now nearly twelve years since the journey to Mount Alexander could be called difficult or dangerous; at the present day, every inch of the road is metalled, and cultivated paddocks stretch along nearly the whole route from the mines to the metropolis. Among the trees, or on the plains on every side, the farmhouses of the settlers have arisen; and instead of sombre lights and shadows filtered through the foliage, the sun falls unchecked on russet crops, or lights the labours of the husbandman.

Twelve years ago last July, the night came down murkily from Mount Macedon, and crept across the short twilight with a thick wintry mist that hung above the broad expanse of the Black Forest; away as far as the eye could penetrate, the rolling clouds might be seen gathering in folds above the foliage of the trees, while at far distances apart the broad plashy road was marked by the glimmering of camp-fires. Except the sounds of bullock-bells, there was no other noise that proclaimed the existence of human life; now and then, their tinklings crept faintly through the mist, but the sounds came with a wintry plaint that made the great silence the more oppressive.

I had travelled far, and was weary with constant stumbling on the uneven track. My swag had become burdensome, and I longed to hear the rattle of the night-coach and the cheerful canter of the hurrying team: sometimes I stood ankle-deep in mud, trying to catch the noises that betokened its approach; sometimes a distant rustling of the trees startled me into a belief that I had caught the sound of wheels; but these would die out, and the silence again creep around me with that vacant singing sound that betokens its very intensity. My purse had run low; but 'Daddy Gardner' was the up-driver that night, and I knew he would give me a lift, and trust me for the money on my arrival at the diggings. It was considerably past sundown when I ceased from my halting walk, to seek rest and shelter beneath a grotesque-looking stringy-bark tree, that stretched out two gnarled, imprecating limbs a considerable distance across the road; and in deep shadow I waited for the only sounds of life and civilisation I would hear for that night. At first, there was nothing to be seen through the dark gray mist, deepening into blackness beyond, but small dots of fire at the various camping-places of the drays and diggers; then, after a long interval, two or three yellow stars crept between them, sometimes blinking through the trees, but always growing larger and brighter, and at length noises grew with them, till the sound of wheels and the clatter of iron fixings were distinctly heard, and the yellow stars flashed out to great goggle eyes, dimmed by the mist and hot steam of the sweltering horses; the crackings of the whip and the driver's voice had scarcely grown to an accompaniment, till the dancing eyes, the hurrying horses, and the dark building behind, dashed up to where I stood.

'Hollo! cov-e-e Gardner! pull up; don't you know me?' I cried in haste, and ran out into the lamplight. 'Don't you know me?'

'No—darned if I do! What do you want?' he replied in a cool nasal tone to my earnestly

emphasised words, as he slowly and cautiously placed his foot on the brake, and peered out at me from a mass of oilskins.

'Ned Scolon of Italian Gully, Fryer's Creek,' I answered breathlessly. 'Walked from Gisborne to-day, and regularly knocked up. Got a seat?'

'Hollo, Ned!' said Gardner, with recognition in his voice, and sending down the brake with a jerk. 'What the devil are you up to, a-humping of your swag like that? Down in luck, eh? All right! Git in; only one all-through passenger inside. Y'kin sit here or thar, whichever ye like. Stop a minute; jist look at the off-leader's blinkers fust.'

I walked up in the glaring light, past the heaving sides of the horses; and having ascertained that the portion of the harness he alluded to was all right, I returned and opened the coach-door, preferring the comforts of an inside seat to the driftings of the mist beside the driver.

'The cove inside won't kick up much of a Barney,' said Gardner, as I opened the door. 'He's bin on the bust, and drank hisself as tight as a bottle; least so they told me when they helped him in five mile back.'

I remember taking one farewell glance at the night I was leaving: the big close trees were blurred in the darkness, and the still branches glittered a sickly green in the rays of the lamps; then I entered with a pleasant feeling of weariness, slamming the door behind me, and turning down the bolt, against the cold and drizzle outside. There was a dim oil-lamp swinging above my head, that partially revealed to me a huddled figure on the furthest seat, before I rested back on the dry cushions, and heard the swish of the whip. The joltings of the coach, and the guttering of the lamp, soon rendered everything indistinct, and I settled myself down, doggedly determined on sleeping away the journey. I saw dreamily the dim silent roads, and the darkening shadows of the forest I had left, as a drowsy feeling surged bewilderingly above the impressions of the day; but I could not sleep, weary though I was, for gradually, as the involuntary effort called up impressions in a kind of phantasmagoria, I became aware of another feeling that grew about me, as from a cold and cheerless atmosphere inside. It seemed as though, in opening the door, I had given ingress to the inclement night, and that it dwelt there, refusing any modification from the breathing of the inmates; my feet, too, were saturated with travelling on the soft roads, and it was some time before the wrappings which my swag contained lent me any warmth. At length, the dim lamp, the obscure coach-sides, and the huddled man, died out from my sight, and I dozed off in a kind of numb comfortlessness that was always present with me. I suppose I remained in one position about an hour, in that state that is forgetfulness, but not sleep, always labouring under a vague feeling that a cold oppressive presence was near me. By and by, this one predominating thought grew more vivid, and with such inexplicable suddenness at last that I almost feared to open my eyes. I remembered perfectly where I was, for I felt the continuous jolting, and heard as away beyond myself the rattle of springs and the monotonous tramp of horses. Sometimes a deeper rut would shake the coach, and stagger the paces of the team, and I would yield to it with a dull instinct. Yet 'the presence,' the cold oppressive something, gradually swept away the humming dreaminess, leaving my

mind preternaturally active, though growing upon me with so much of the force of reality, that the beating of my heart became audible above the rattle and tramping outside. 'What is it?' I thought, as I kept my eyes nervously closed. 'Have I caught a fever from my long walk, or am I really dreaming?'

No, my head was swaying about in the corner; I could feel the padding of the leathern sides; I felt myself give to every motion of the conveyance; even the voice of the driver reached me, and at times I could detect the fall of his whip-lash. I began to wonder if the lamp was yet burning, or if the inside of the coach was in darkness; but I was afraid to learn that the flame had left the blackened wick, that the miserable flicker was extinct, and that I should see nothing, but feel 'the presence' still. A heavy lurch, and the sharp tones of Gardner, made me open my eyes almost unthinkingly. Pshaw! there was the draggled lamp sputtering out its little interjections of light, there was the glazed roof, the brass-headed nails; there the iron stanchions, the rattling windows, heavy with vapour, and there the—

The seat opposite was empty! What a throb I experienced when I learned this! I did not move in the very slightest from my position, but stared vacantly at the dim cushions, bobbing irritably to every jolt and lurch, and sending out malicious black glitters from the buttons that studded them. I lay with my back to the door, which I had firmly closed, and from the position of my legs, that on the other side could not have been opened without my knowing it. Where has the man gone, was my first thought? Has he been standing over me during my slumber, and managed to leave the coach? Has he paid his fare? Delirium tremens? But it was impossible he could go out. He could not have rolled unto the floor, for there lay the wet straw, revealing its limp trampled stalks from time to time in the odd jerks of light that fell upon them. I started up, and managed to stagger to where the man had lain; and it was with a queer mixed feeling of fright and curiosity that I perceived the passenger's legs sticking out from beneath the seat, but nearly hidden by the straw that had been shaken to the front by the constant motion. At first, I thought he had chosen his present position to avoid a leak in the roof, for there were dabbles of water on the cushions; but I remembered what the driver had said as to his sobriety, and I concluded that the heavings of the coach had unseated him, and eventually rolled him into his present position. I put one hand on the cushions, and stooped down to lift him to his place, till I bethought me that it would be better to let the drunkard sleep out his debauch where he was, rather than place him in a position from which he might be again thrown. I would just satisfy myself that he breathed easily, and return to my old position. I knelt down a second time, amid the rattlings of the coach, that now seemed to be jumping along the road like a thing possessed; but I could not hear him breathing; and for all the noise of rattling irons and galloping horses, I was convinced that I could have detected the faintest inspiration. Again irresolute and nervous, I rose and sat down, determined to convince myself fully before I called Gardner. I can remember how I dreaded to lift the deep valence that hung from the seat, and how I gradually came to notice the

cold presence I had noticed a short time before. While thus sitting, I remarked that some of the water upon the cushions had been partially jolted off, and that it was falling slowly in long thick drops. I cannot tell by what chain of reasoning I arrived at the conclusion, but the conviction forced itself upon me, that the pools upon the cushions were of blood. Truly enough it was so, for when I remembered placing my hand on the damp seat, as I first stooped above the man, I opened my palm to the light, and found it marked with red streaks. It is most difficult to analyse the feelings which stamp themselves on the minds of some who are placed in situations of this nature. I believe mine were much the same as would be felt by most men. My mind was active and speculating, albeit there was an overriding feeling of stupor and fright that was predominant, and it was at least a minute before I could draw my eyes from the hob-nailed laceups and the patched moleskin trousers. Sometimes the legs would move rigidly with the motion, or appear in the uncertain light to be drawn upwards, or the valence would sway as though the man was trying to creep from beneath the seat; and when I found that these fantasies were growing, I staggered hastily to the door, and twisting back the bolt, leaned forward, and shouted to the driver. There was no reply. I could hear him encouraging his horses, but the wind had risen fiercely, and it seemed to whisk my voice away to the other sounds we were leaving with the echoes. Then I groped along the sides of the coach, and felt painfully with my feet for the little iron steps; from thence I raised myself, till I stood on a level with the box-seat. 'Gardner, Gardner!'

'Good God!' he exclaimed, as he turned round with a start, and a smart jerk of the reins; 'you look scared to death. What's up?'

Battling with the wind for every word, I replied: 'Passenger—dead man—killed—come down—for Heaven's sake, stop!'

Gardner gave a long low whistle, and almost immediately resuming his usual nonchalance, he pressed upon the brake, and peered silently into the darkness. After a pause, he said: 'Wal, I guess this is an everlastin' fix.—Quiet, Buckjumper.—Jump down, Ned, and scotch the hind-wheels with that spar there, till we see who we've bin "toolin'" this last couple of hours.'

In a short time, the reins were tied firmly; and taking out one of the large lamps from the front, we proceeded to examine the body. Gardner entered first, and cast a glare of light over the interior, shewing the straw as though sopped in dark blood and mud. Seizing hold of the man's feet, he drew him from beneath the seat, and as he gradually appeared, I saw that his vest and a large muffler which he wore were also saturated and red. The face was intellectual and handsome, and it appeared to me as though the calmness of sleep had crept upon his features as death came. I also gathered from the rather delicate but white and muscular hand, that the unfortunate man had not long been in the humble station which his clothes indicated. There was to me much attraction in the face of the deceased, a firm sweep of the jaws, and a delicacy in the decided, almost patrician features, that riveted my observation. The hair and beard were soft and yellow, except where stained and crusted with blood. All the fear I had previously felt had now given place to a feeling of deep pity and commiseration for the

untimely fate of him who, but a few hours before, must have possessed a splendid vitality.

I turned to look at Gardner, and was surprised to see that his countenance was ashy pale; the imperturbability that usually characterised him had fled, and his face seemed almost as white as that of the dead man. 'Come out, Ned, for Heaven's sake!' he said, in answer to my look of surprise. 'That's poor Medway.—I know now how he met with his death,' he said more slowly, as he knelt down and tenderly undid the heavy wrapper that was about the man's neck. 'I knew his hunt for Black Douglas would end badly. Look ye're'—and he shewed me a large gash at the left side of the throat. 'He got goss instead of his gold and the reward that government offered.—Black Douglas,' he continued, speaking partly to me and partly to himself, while refastening the muffler, 'stuck him up about three months ago, and eased him of ten pounds weight. 'Twas all the gold he had, and he worked harder for it than any man on Bendigo. He swore to me about five days ago he'd foller the nigger through creation to give him fits.—I'm scared more,' he said, as he straightened the crumpled limbs, 'for that unfortunate wife of his at the hotel beyond than I half like.—That'll do; come out now.'

I got up beside him, and we drove slowly through the storm. The coachman sat with his head leaning over on his breast. He spoke little during the next two miles, all his energies seemingly intent on avoiding any roughness of the bleak track. He told me that Medway had left his wife at the next stopping-place, while he went away armed, and desperately determined on finding or capturing Black Douglas, and if possible, getting some trace of the gold he had lost. Gardner and another were the only men to whom he revealed his intentions; and notwithstanding their efforts to dissuade him from the mad undertaking, he obstinately persisted in it. My informant knew nothing of the antecedents of the dead man or his wife, except that they were from some part of England, and that she was 'a real genu-ine lady.' Now that the remembrance of the time when Medway was lifted into the coach came more forcibly back to my companion, it occurred to him that one of those whom he caught a glimpse was like 'the Bishop,' a mulatto of the bushranger's gang, who from his cruelties was much more dreaded than Black Douglas; and he had no doubt that death had been inflicted by his hands. The funeral pace ended at length, and we stopped opposite a pleasant-looking public-house, through the window of which I could see bright fires, and from whence came sounds of laughter.

'Here, Ned,' said the driver; 'take the reins; guess you don't care to see the meetin'. I'll run in and git some help.' In about five minutes, three or four men came out; I heard the door of the coach opening, and a few hushed whispers; then the grinding of iron-shod feet on the gritty road, and then the dark figures and the dark burden passed inside. There was a hush within, as though the silence of desertion had fallen upon the place, and then, after waiting a time, a wild shriek rang out upon the darkness and the storm. I used to think that descriptions in novels of sorrow and despair being concentrated in a cry like this, was mere word-painting: I don't think so now. While I write, I can recall the sound, as it seemed to sweep by me and mingle with the wind and the voices of the forest. I caught a glimpse of a slight, girlish

figure being helped past the window, to face a new life in a new country alone. God help her!

Gardner came out slowly, and drove away; he never spoke or altered his position at any of the intermediate stations, till a long line of tents told us we were entering Forest Creek.

Exactly twelve months after the above incident, the report of rich discoveries having been made at a diggings called the Alma, attracted me, together with thousands of others, to the place. The main portion of the place was a long array of canvas buildings, where miners bought, sold, and debauched; where the wild revel was never still; where the worst vices were pandered to for gold; and where the most revolting excesses attracted the largest crowd. The industrious and orderly portion of the miners found it necessary to pitch their tents in little colonies, for mutual protection from the ruffianism that was rampant. I was induced one night, by the cries of the bellman, to see Miss Woolridge acting at a large temporary theatre that had been erected a short distance back from the street. The roof was formed of canvas, and the seats and stage were of the very roughest description, yet, notwithstanding, the place was filled by an audience that represented nearly every nation of the world, all pursuing one avocation, in their strife for speedy fortune. The marquee was filled with a cloud of tobacco-smoke, which the hissing naphtha lights scarcely dispelled. There was a perfect and admitted equality amongst all, that could only be disturbed by power of muscle and vigour of form. It was nothing that men possessed their hundredweights of gold; nothing that the chamois bags of one were swollen with gold, and 'planted;' or that another was nigh starving: the potent power was not that of riches, it was the might of strength that prevailed. The broadest chested and the heaviest hitted was the man most respected; he made his way in the crowd, and won a quiet obeisance, that a prince of the blood would look for in vain amid such a gathering. There was the swarthy, keen face of the continental, with his secreted dagger; the open, saucy countenance of the runaway sailor, with his constant knife; the escaped convict, with his hard, rugged visage, and unpleasant smile; the aristocratic features, wearing that cold, unmoved look that indexed English breeding; and not least, there were those who sat with folded arms across their huge chests. These were the quietest of the whole assembly; confident in the vast strength and powerful thews that nature had given them, and enjoying the excitement and swaying of the audience, with that unmoved, self-reliant look that never fails to win respect. I sat immediately behind two men such as I have last described; they were both unusually tall, and powerfully built. One of them, whom I heard addressed by his companion as Scott, I found by his accent to be a Scotchman; the other was an American; I could tell that by his accent too, but principally by the long bowie-knife he wore in his crimson sash. Miss Woolridge had just brought down the house to a Highland fling, when the tumult of hundreds of voices, in excited dispute outside, surged in upon us, and in five minutes, half the seats were empty. Scott and the American walked through the crowd with a facility that amused me—they quietly put little men on one side, and shouldering others out of the way, strode along with a quickness that was surprising. I kept immediately in their wake; and

in a shorter time than would be imagined, the three of us were picking our way over the deserted holes to the street, on the opposite side of which the principal hotel stood. I will not readily forget the wild scene that presented itself to me on that occasion. Opposite the front of the hotel, and inside the bar, about three hundred persons had assembled, all of whom seemed to be talking violently concerning some occurrence that had just taken place. The crowd swayed from side to side, clamouring for admittance, although the place seemed to be literally crammed with people. Bare brawny arms were raised, hustling those who stood in front, the owners of which were in turn hustled back, to make way for others stronger than they. Scott and the American, who seemed determined to learn the cause of the tumult, had, by dint of much exertion, made their way to a log near the door, on which they perched themselves, and looked in. A surge in the crowd favoured me, and I, too, gained the same elevation. The bar seemed to be paved with a shoal of human faces, where energy, excitement, debauch, and villainy were very legibly stamped. Apparently heedless of the uproar of argument and blasphemy, a negro stood at the corner of the counter, hobnobbing with a few chosen companions, each of whom seemed to regard the uproar as a matter of little moment. From the babel of words that were bandied about, I gathered that Black Douglas was inside, and that a portion of the crowd were indignant at his thus publicly shewing himself amongst them; whilst others, with a feeling of blackguard chivalry, sought to protect him.

Not far from where I stood, I remarked a knot of seven or eight men, who, notwithstanding the cries and movements of the crowd, stood silently together, apparently apathetic, but, in reality, intent on every feature of the disturbance. They wore long dark cloaks, and now and then the quick glitter of steel accoutrements told that they were constables. Indeed, to a close observer, it scarcely needed such evidence as this, for the way in which they stood, shoulder to shoulder, quietly and firmly resisting the inroads of the crowds, was enough to identify them. I had barely noted these things, when I heard the American, who had been silently employed in keenly watching the negro, say: 'Black Douglas, by God! Come on, Scott; I owe him one. Slip down; gently does it. Now, then, to the back like greased lightning.' In a minute more the two men had mingled with the crowd, and were pressing round to the back portion of the house. Curious to see the result, I followed. The American ran quickly to the kitchen-door, but finding it secured, he put his shoulder to a large hinge-window and pressed it in; then springing over the sill, he unbarred the door to Scott. They shewed no desire to close it, and but little fear of the consequences, although any of the inmates would have been perfectly justified, in the eye of the law then ruling, in shooting both the intruders. I paused for a moment, and followed, guided by a distant light; and I had just emerged from a side-room into the bar, as I saw that Scott and the American had gained positions beside the negro. The face of the American was very pale, but there was a determined look in the eyes and set of the mouth that augured unfavourably for the bush-ranger. For a moment, he seemed to consider the chances of his position; then, as though having made up his mind, he took a step nearer to the

elbow of Black Douglas, and looked at him in such a way as to attract his attention. 'Hollo! mate,' said the latter in thick saucy tones; 'y' look at me 's if I owed yer summat. Wot d' yer want?'

'Forty odd pounds, mate,' returned the American, 'that you robbed me of in the Black Forest.'

'Yah, yah!' laughed the darkie; 'wish ye may git it.'

The interchange of words occupied less time than it takes me to write them; and before Douglas had fully concluded, the sinuous arms of the American had passed across his back and helplessly pinioned his elbows.

'You look out, Scott,' he said in a low distinct voice, 'and clear the galley: the traps are outside; I'll mind the nigger.'

Before the bound man had time to recover his surprise at the audacity of the attack, he was six feet across the floor, in the direction of the entrance; while the towering form of Scott might be seen working a passage with a determination that nothing seemed able to resist. Another moment, and a rush was made around Douglas by a party of blue-shirted, bare-breasted men, whose hardened, shaved faces proclaimed them to be convicts. Once the gleam of a knife flashed between Scott and me, but the armed man was stopped by a swift counter from the Scotchman, under which he sank like a stricken bullock. Another and another went down before his mighty blows; but the crowd thickened notwithstanding his exertions, and it seemed as though scores of bared arms were raised to clutch him. At one time, I saw a large brass candlestick uplifted by a broad hand, and had it fallen upon him, he would probably have struggled no more; but the American's eye was too quick, for with a rapid back-handed blow, he struck the man in the throat, and staggered him back stupefied; then he raised his voice and called 'Police!' In a second or two, there was a swaying at the doorway, and the darkly-clad men entered in a little compact body, that drove the crowd before them like sheep: then I saw the black caps distribute round the American and his prisoner; and I heard the sharp click of the manacles as Douglas, shouting for assistance, was literally swept out. Scott, whose great arms were stripped and bleeding, turned to the crowd on each side, and called upon 'all honest men to stand by them.' A hundred willing voices replied, and in a minute a bodyguard was formed strong enough to defy any further attempt at a rescue. Knives and pistols were displayed as the *cortège* of determined men moved off to the lock-up. By the way, I heard one of the policemen say: 'All the others is nabbed;' and what seemed to afford him infinite satisfaction, as it certainly did me, was the circumstance of 'Bishop' the mulatto being amongst them.

There was no delay on the part of the police: a chain was attached to the handcuffs of some half-dozen men, who were dragged from the rough prison, and half-bundled, half-thrown into a bullock-dray that was in waiting. The word to start was given; and the crowd, which by this time numbered three hundred, followed the slow conveyance. We had got about twenty yards from the canvas street, when a stranger ran up breathlessly to where I walked beside the wheel, and asked if it were true that the 'Bishop' was of the number. There was an intense eager pleasure in his voice that told of some tale of past violence,

yet unatoned for by the prisoner. I merely answered the man's question without making any inquiries. They were not needed; for during the journey to Maryboro'—a distance of three miles—I had ample opportunity of looking at the face of my companion, by the moonlight. It was pale and drawn, while the eyes seemed to glitter with a fierce vengeful feeling. Once he bent over and spoke to the mulatto, and then the dirty-white, brutish face was raised in wonder, but he struck it such a heavy blow that his features were covered with blood. Again and again he raised himself, and again and again he was mercilessly stricken back, till at last the man's fist fell with a slapping sound on the dabbled and cut flesh. Many a blow the wretch received that night, and his features were nearly bruised from the semblance of humanity; but all of us had heard of the mulatto; and although rather ashamed to say so, my heart went with every stroke that fell upon his heavy features, for I remembered poor Medway and his despairing wife. Five out of the six are now working on the hulks.

DISAPPEARANCE OF A LUNAR VOLCANO.

VIOLENT convulsions of nature, exhibiting themselves as earthquakes around the basin of the Mediterranean, in Algeria, Santorin, Cephalonia, and lastly in Mitylene, have, during the past few months, called forth our sympathy and active assistance in behalf of the numerous sufferers in these various localities. Owing, however, to the circumstance of the several calamities having befallen communities situated beyond the range of our immediate interests, these sudden and fearful visitations, even though attended by the loss of many lives, have failed to awaken any marked consideration in this country. That a catastrophe occurring at a vastly greater distance from us, unattended, so far as can be surmised, by any loss of life, should have fallen still-born, as it were, within our cognizance, need therefore cause little wonder; and yet, strange as it may sound, such an event *has* happened, and that, too, in sight of the whole world. To descend to plain language from the lofty sphere of our meditations, our attendant satellite has recently been the scene of a most surprising change of surface, before which the petty tremblings of the earth in the places above named sink into utter insignificance.

The news comes to us through Mr J. F. Julius Schmidt, Director of the Royal Observatory in Athens, who has communicated the fact to the Imperial Academy of Science in Vienna. That some estimate may be formed of the authority which may be attached to Mr Schmidt's statement, it is only necessary to mention that he has made drawings of ninety-five different phases of the moon, besides upwards of 1200 hand-sketches of various points of interest upon her surface since the year 1840. If any one can be acquainted with the usual outward appearance of the moon, he therefore of all men should be; indeed, his continued study of the subject might almost induce an irreverent reader to insinuate that he must be 'moon-struck.' But the same reader will persist:

'What can Mr Schmidt tell us with any degree of certainty about the moon?' We reply: Much more than you may suppose; and, if you will believe us, we will briefly recapitulate the heads of his experience. He tells us, then, first, that the moon has no atmosphere; next, that no signs of water are apparent on her surface; and lastly, that there is abundant evidence of her surface being crowded with active volcanoes. The first point received a tolerably clear confirmation the other day on the occasion of the eclipse of the sun, when, on the edge of the moon reaching the edge of the sun, the rough projections on the moon's disc cut off, as it were in passing, small particles of the sun's disc, without producing any effects of an illusory character, such as are known to follow under similar circumstances in this sublunary earth, owing to the refraction of light produced by our atmosphere. The second point is a matter of observation by means of powerful telescopes, as well as of inference from various scientific reasons. The third point is that which principally concerns us in the present instance. When Galileo first turned his telescope upon the moon, he was delighted to find her surface covered with apparent protuberances; and as the sun rose higher over her face, his impression was turned into certainty as he witnessed the shortening shadows formed in exactly the same way as in the case of mountains on the earth. The more carefully as well as more powerfully constructed instruments of the present day fully confirm this appearance, which can leave no doubt upon the mind of the honest observer that lofty mountain-ranges, interspersed with plains, really exist upon the moon's surface. The sharp eyes of students of the heavenly bodies having been persistently turned upon the face of our satellite, they at last remarked that some of the eminences—indeed, that very many of them—threw such a shadow as might be expected in the case of volcanoes with gaping craters. The profound depth of these was evident from the considerable alteration in the length of the internal shadows thrown upon them as the sun's rays fell upon the craters at a greater or lesser angle; the very sizes of the orifices have in some instances been approximately measured, and our astronomers can tell you in yards the distance across these yawning abysses in the moon, with greater exactness than many visitors to Vesuvius, with some pretensions, too, to geometrical acquirements, could calculate the dimensions of the fiery gulf at their feet. Men of industry (and astronomers, to obtain any marked results, must be very industrious) have mapped out the surface of the moon, and as we mentioned above, hundreds of carefully prepared charts are in existence, shewing, doubtless with as great exactness as many atlases shew the features of the earth's surface, the leading characteristics of the moon's surface. In these charts, the numerous volcanoes in the moon are laid down in their respective positions, each bearing its distinctive name; amongst them, that one at present claiming our attention which has been called Linné. It is situated in the eastern portion of that district of the moon known by the appellation of Mare Serenitatis, and is an isolated crater, which, according to the investigations of Mr Schmidt, has been

regarded since the year 1788 as a fixed point of the first magnitude. The diameter of the crater is, or rather was, estimated at from five thousand to six thousand French toises, or from twelve thousand to thirteen thousand yards; and its depth was supposed to be very great. This enormous volcano, then, with an apex of such large dimensions, must at the base have covered a surface of many square miles in extent; and Mr Schmidt has made the startling discovery, which has been confirmed by observers in this country, that it had, on the 16th October, wholly disappeared from the surface of the moon. As Aladdin rubbed his eyes in doubt as to the correctness of his vision when his brilliant palace disappeared from his ken, so the learned astronomer at first doubted the correctness of his sight, and devoted particular attention, on every recurring favourable phase of the moon, to this remarkable phenomenon; and at last, finding that he had not been deceived in his observation, made known his wondrous discovery to the scientific world. His letter announcing it to the *savans* of Vienna was accompanied by sundry speculations as to the causes of the event, or rather as to the manner in which it had been effected, which may be of interest to the general reader.

Mr Schmidt was of opinion that the phenomenon was not produced by an eruption of steam or ashes, as the cloud of smoke would give rise to a shadow at sunrise or sunset in the moon, which he saw did not occur. Nor was any such result visible at the phase of the moon. If, on the other hand, the crater had fallen in, a deeper shadow would have exhibited itself during the phase; but this was not so. Had the surrounding mountain-range been shattered by a violent explosion, the ruins would have shewn themselves by the shadows they would have cast, which were altogether wanting. Had the crater become filled during the eruption by fluid or dusty masses, without overflowing, the internal shadow, it is true, would disappear, but the external hill would, at sunrise or sunset, produce a marked reflection, which Mr Schmidt failed to perceive. A phenomenon of such a character as this was observed in 1790 by Schroeter, and again in 1849 by Mr Schmidt himself, in the case of the central crater of another volcano, but would not account for the present phenomenon. If, however, we imagine that such a mass, after filling up the crater, overflows its sides, and converts into a gentle declivity the almost precipitous sides of the crater, we should then, Mr Schmidt considers, have a combination of circumstances which would entirely meet the various requirements of the results observed.

The discovery made by Mr Schmidt is justly considered by his co-philosophers as a feather in his cap, inasmuch as such an event, although long since surmised as possible, has hitherto escaped the observation of diligent searchers of the heavens; indeed Mädler, a fellow-countryman of Mr Schmidt, who had bestowed much labour upon this point, was compelled, after many years of fruitless research, to confess that he had failed to detect the slightest sign of any physical alteration in the surface of the moon. The phenomenon recorded by Mr Schmidt, which may be said to find an analogy upon our earth in the mud-volcanoes of the peninsula of Taman, between the Black Sea and the Sea of Azov, exhibits possibly the process by which those halo-like appearances, so visible over the moon's surface, have been formed during countless ages;

but whether so or not, a well-established observation of a change going forward in the face of our satellite, cannot fail to prove of more than mere cursory interest.

LORD ULSWATER.

CHAPTER XXXIII.—BENDIGO BILL KEEPS VIGIL.

A DARK, warm, stifling night it was, even on the lofty cliff, as Bendigo Bill, after prudently waiting till the shades of evening should have gathered with sufficient thickness to cloak his proceedings from impertinent scrutiny, stole out of his hiding-place, and made his way towards the ruins. Those ruins he was fairly well acquainted with, having bird-nested and scrambled among the ivy and the gray stones in his boyhood, when the public had been permitted easier access to the extensive wreck of the abbey buildings, than was the case in these later days of monster excursion-trains and frequent travelling.

'I'm in luck for once; or, mayhap, 'tis my Lord's luck,' said the garrotter softly, as he slipped, with unshod feet, and carrying his nailed ankle-boots in his hands, into the precincts of St Pagans; and he cast a glance upwards at the sky, and gave a grunt of contentment, for the weather was propitious to his purpose. All that day, there had been dusky masses of brass-coloured cloud lying piled in mountain-ranges along the seaward horizon. Rounded and blurred at their edges, these great vaporous masses had floated in the hazy blue, now reddened to the tint of glowing hot copper as the sun's rays slanted athwart them, now heaped like dingy wool-packs, and presently blackening like the smoke from a burning town. Soon after sunset, a lazy air-current, too languid to be called a breeze, had begun to roll these cloud-ranges slowly down from the seaward, and to spread them like a heavy canopy over the darkened sky. It was only now and then that the moon shone forth through the rifts overhead, and after each of these glimpses, the pale light seemed to be swallowed up in a blackness more absolute than before.

Bendigo Bill was an adept at concealment. His stealthy progress towards the ruins would have done credit to a savage, and indeed, in this branch of useful knowledge, savages had been his teachers. Had he not camped out with the black-fellows during a portion of his bushranging career at the antipodes, and was it not from these able instructors that he had learned to crawl like a snake, and to take advantage of every inequality of ground, every tree, rock, and shrub; at one time to lie like a log in the tall grass, contented to advance by inches, or not at all; at another, to creep on hands and feet under the shadow of the tea-scrub, as a wild dingo creeps towards the live mutton of the flock! He reached the ruins without giving any alarm to man or dog, squeezed himself close to the doorway of the guest-house, and waited the pleasure of his patron.

Bendigo Bill was patient. Half-an-hour, an hour, and more than an hour, had gone by before

he began to tire of his watch. He was hungry, after his long stay upon the hillside, or it is probable that he would not have found the time heavy on his hands even then. Now, to men of the ex-convict's class, men who have tried shepherding, bushranging, hut-keeping, and the other pursuits, innocent or the reverse, of Australian working-life, there is one resource that never fails to supply the lack of food, society, and comfort; one talisman that charms away lowness of spirits—tobacco. With that single specific, the bushman sits by his fire content, although his last ration be consumed, his way lost, his horse weary, and every water-hole in the river appears to be dry. Bendigo Bill now pulled out his pipe, filled it, kindled it, and sat resignedly smoking under the lee of a fragment of mouldering wall.

As the man sat and smoked, he thought too in a sort of narrow fashion, such as became a person so eminently practical. Even garroters think. Much brain-work, as a matter of principle, Mr William Huller eschewed; but the business which had brought him to St Pagans was something abnormal, and stimulated such ratiocinatory faculties as he was master of. He was doing a very unusual thing—deviating abominably from the strict code of professional etiquette in which he had been trained. This English Thug—whose only difference from his congener of India lay in the fact that his Bowhance was Plunder pure and simple, and that he wisely preferred to stop just short of murder—was sensitive on the point of honour. To peach, to sell a confederate, appeared to him as despicable an offence as some gross betrayal of state secrets would appear to a zealous Under-secretary; and yet he was going to spoil a scheme of considerable promise for the sake of a white-fisted aristocrat, one of that very class that he had considered as born to be robbed. The truth was that Lord Ulswater had established over him that kind of ascendancy to which persons of a rough and fierce nature are not the least liable. As the artisans, and students, and school-boys of Italy are stirred by the magic of Garibaldi's renown, and even babble in their sleep of the popular idol, the 'Galibardo,' who is to them at once hero, and saint, and crownless king, so this sturdy member of the dangerous classes did homage to the man who had conquered him. Such scanty stock of romance as the ex-convict had within him was awakened by his encounter with one whom his rugged soul recognised as a born captain of men. He felt, rather than thought, how glad he should be if 'my Lord' would do something, start upon some venture, buckle to some enterprise, in which he, Bendigo Bill, could follow, trusty and staunch, through fire and water, if need were.

The time went on, however; the clock on the stable turret struck the hour for the second time. Bendigo Bill, as he puffed at his pipe, began to grow almost uneasy at the awful stillness and solitude of such a place as that, on such a night, with driving clouds above, darkness around, and no sound but the dull deep wash of the sea against the boulders of the beach. Old, long-forgotten stories of the strange sights that had been seen, and the strange sounds that had been heard among the ruins at St Pagans, came gradually back to his memory. He had never been, strictly speaking, a believer in those tales of the supernatural which are ranked as ghost-stories; but any incredulity on his part was the result of no mental culture or religious conviction, but simply of the fact, that his muscles

and nerves were of the toughest. A strong man, unimaginative to a degree, was not a whit more likely to care for the weird legends about the abbey than an inductive philosopher might have been; yet, as he remained in his hiding-place, and as the night-wind chilled his blood, he remembered enough of the gossip current in Shellton to make him wish he were elsewhere.

'Confounded crazy old place!' growled Bendigo Bill; 'why don't they cart it away—adjective old rubbish that it is—no good at all to anybody?' This last sentence was spoken with an injured air, and in an injured tone. The garrotter was not very tender of such relics of the past as came under his notice; and the sight of the ruins at the abbey moved him to an honest contempt and sincere dislike, such as those which Atahualpa, Inca of Peru, felt for the copy of the Vulgate that the Spanish monk bade him reverence and obey—he, to whom a book was an ugly calf-bound parallelogram, and nothing else. Thus spoke Bendigo Bill, quite unconscious of the number of distinguished persons, orators, sages, tribunes of the people, who agreed with him that not the abbey-stones alone, but very much more important legacies of the Past, robes, crowns, coronets, titles, privilege, power, wealth, the sceptre, the mitre, the diadem, gold-sticks and silver-sticks, should be viewed as lumber, to be carted off, on the first convenient opportunity, to Tophet itself.

But just as the graduate of Coldbath Fields University uttered this fashionable sentiment, a short-lived glimmer of white moonlight fell, like a smile on a wan suffering face, through a gap between the gloomy clouds as they sailed overhead. The ruffian started, and a curse rose to his lips, and died away there, half-futtered, and the hair bristled on his head, and the heat-drops beaded on his brow. He gasped for breath, as if a heavy hand had suddenly compressed his heart in its vice-like clutch. The moonlight had but shone and vanished, like the flickering of a lamp that sends up its dying flame in one last leap before it is quenched in darkness; but by that brief radiance, Bendigo Bill had seen, or thought that he had seen, a black shadow, in the monkish garb, glide silently among the shattered walls: for one moment, he saw the spectral figure, the cowl, the dark Benedictine robe, the girdle of rope, the tall stature that rose gigantic in the sickly play of the moonbeams. The sandalled feet made no noise as they trode the ground. The monk passed by, threatening, terrible, with hooded face, and arm uplifted as in menace, and in an instant the clouds closed above, and the night reigned again. The apparition was gone. Long and anxiously did the garrotter wait for another flicker of the moonlight; none came. He wiped his hot forehead, and gave a sort of groan. 'Saw it myself. I'd never have believed it, else!' he murmured doggedly, like one who is unwillingly convinced.

A quick step among the broken stones and tufted hummocks of grass-grown earth—Lord Ulswater himself, doubtless—and immediately afterwards Lord Ulswater's voice reached the garrotter's ear.

'You, Bill, or whatever you call yourself—come out of your den, my man! How can any eyes but an owl's be supposed to see you by this light?' It was indeed by this time so dark again that the two men, patrician and plebeian, patron and client, could scarcely distinguish each other's forms as

they met. 'Hist! I thought I heard something,' said Lord Ulswater in a subdued tone scarcely above a whisper, and he seemed to listen intently for a while, but presently appeared to be satisfied that he had been mistaken. 'After all,' he said, still cautiously, but with more confidence, 'eaves-droppers are not much to be looked for hereabouts. The fools of servants dare not, for their very lives, stir out among these old stones after dark, for fear of bogies, I believe.'

'Hush, my Lord! don't talk so, begging your pardon!' exclaimed Bendigo Bill, laying his hand upon the sleeve of his noble employer. 'I have seen it—seen it not ten minutes since.'

'Seen what?' asked Lord Ulswater impatiently.

'It—the ghost of the old monk—they always did say it walked—but I saw it, as I see you now,' said Bendigo Bill, again wiping his forehead, and speaking with an evident effort, and a furtive glance over his shoulder, as though he more than half-expected to see the Thing creeping up behind him. By this time, the moon had again peeped out, and for a longer interval than before; and Lord Ulswater, with the white light full upon him, could mark how pale and ghastly the garrotter looked.

'Nonsense, Bill. A stout-hearted fellow like you should be above putting faith in these old-women's tales,' said the ex-convict's new patron, in a cheery, good-natured voice. 'Moonlight plays strange tricks with the eyes, you know, and you have grown fanciful.—Take a pull at this:' giving a little silver hunting-flask into the ruffian's trembling hand—'and you can have the bottle for a keepsake, if you choose. Drink, and be a man!' Bendigo Bill drank the brandy, and felt greatly the better for it, his fears of the supernatural world vanishing like a ghost at cockcrow. 'Now,' said Lord Ulswater, 'if your nerves are steady again, I wish to be told the truth about this affair of our friends at Shellton; and I have the pleasure to repeat my assurance that no harm shall come to your worthy father, who is, I gather from you, one of my ill-wishers. Who is he, in the first place?'

'His name's Ben Huller, and he's on the parish,' answered Bendigo Bill, with that reluctance which seems innate in the Englishman of any grade when a confession of poverty is to be got through. 'Not a common pauper, though. The old beggar is a bit of scholar, and gets round the guardians. They've made him deputy-porter, and he was deputy-wardsman to the sick, and had the care of the dead-house at Shellton workhouse, and that was how Dr Marsh came to deal with him.'

'Go on,' said Lord Ulswater smoothly—'go on. I do not see, as yet, what your father's official duties, and his dealings with Dr Marsh, can have to do with me and my interests.'

Bendigo Bill strained his eyes in vain to catch a glimpse of his patron's face; it was too dark for that, but had it been more possible to discern features than was the case, no betraying signs of emotion would have been visible on the handsome face confronting the ex-convict. 'As having the care of the dead-house,' pursued Bendigo Bill, 'he was able—for money—to bear a helping-hand on a certain day, years ago now— My Lord,' burst out the man with sudden energy, 'I want to stick to you through the whole of this ugly job. Mind, I don't ask your secrets. I don't exactly know, or care to know, what you've been up to—but you're in danger, if ever a great gentleman of your sort

ever was in danger. It's a hanging touch—that's all—by what Marsh and my father said in my hearing—though I have heard tell lords like you have a right to have their heads chopped off—but death, anyway—and they say now they can prove it.'

'A hanging touch!' Lord Ulswater's lip writhed as he repeated the hateful words. 'You have a curt, succinct way of putting the matter, my friend, which is very convincing.—So your excellent parent, and that disreputable practitioner, Mr Marsh, mean to bring me to the gallows, do they? May I ask Why, and may I ask How?'

Bendigo Bill crushed his pipe, which had fallen to the ground, beneath his heel, as he rejoined, almost apologetically: 'Well, you see, my Lord, my old dad's a poor man—he's no spite against you; it's all for the sake of a handful of shiners. Marsh, the doctor, *has* a spite against you. He says he's a superior man, and you've been the ruin of his hopes. Besides, he expects to get a fortune by this.'

'A fortune! I fear he will be disappointed. But I do not quite catch the meaning of what you say, as yet,' said Lord Ulswater in the same low but clear voice in which he had spoken throughout.

Bendigo Bill shuffled considerably with his feet, and seemed to ponder his reply. At last he said, with manifest reluctance: 'My Lord, begging pardon for offence, which none is meant, the game you've been up to—so the doctor says—is murder.'

'Murder!' Lord Ulswater had not wished to repeat the dreadful word, but it dropped from his lips involuntarily, like an echo of what his ruffianly companion had said. That hideous name for a hideous deed aroused the sullen echoes, in very truth, of the ruinous guest-house, as if it had raised a ghost, and the hollow sound came back with melancholy reiteration to the speaker's ear. Murder! A strange, wild, utterly improbable accusation, surely, to be coupled with the name of gallant, winning, frank-eyed John, Baron Ulswater. A long dreary pause ensued.

'Murder is a very serious crime, no doubt,' said Lord Ulswater, breaking the silence; 'and yet I hardly see how a fortune is to be gained by taxing me with such an offence. Hush-money, indeed!—'

'No, my Lord,' interrupted Bendigo Bill in a very decided tone; 'not that. Marsh says he's tried your Lordship, and could not get you to bleed freely—they was his own words. He hopes to get paid by those to whom the estates would go after you.'—Instantly there flashed upon the listener's mind the memory of those Carnacs, far away among the Gloucestershire wolds, who were heirs-at-law to the lands, though not to the title—a plain squire's family, whose last intercourse with the ennobled senior branch of the House had been held somewhere about the time of Wyatt's rebellion. They were mentioned in the old entail, though, made by that Lord Ulswater who had followed King Charles to Bruges, and who had desired to preserve the property to the race of Carnac, and the entail had never been cut off.—'And,' went on Bendigo Bill, 'they've got evidence. They wanted me, as I'm an old hand, to slip into the abbey some night, and rummage among your Lordship's papers, that Marsh says you keep in an old cabinet with a gilt-brass sort of plating over the drawers in the Blue Room, looking south.'

Lord Ulswater laughed. 'Mr Marsh has a good memory,' he said; 'but there is no scrap of writing in that cabinet that might not be printed and published in the London newspapers. Only fools keep dangerous letters.—Anything else?'

'Yes,' answered the man, in a lower and more cautious tone—'yes. And mind, my Lord, I speak for your good. Marsh has come back from London quite joyful, and bragging of his cleverness in having found out the address of some woman who would make a witness against your Lordship; and now he says he has you under his thumb.'

'What woman?' exclaimed Lord Ulswater, with a sudden raising of the voice that was almost a cry of pain—'what woman?'

'Name of Fletcher,' said the ex-convict in reply. 'Why, my Lord, are you ill?' For the moon had broken through the wrack of clouds again, and the ghastly pallor of Lord Ulswater's fair face was something terrible to see, now that the lips were tightly drawn back so as to shew the white teeth, and that the eyes seemed starting from their sockets. The expression of the whole countenance was as that of one who sees a spectre rise before him, or of one who bears some physical torture so intense as to wring every nerve with the fierce thrill of bitter anguish.

Not one word did Lord Ulswater speak until the moonbeams had been swallowed up again by the black clouds, and then he resumed the conversation in a voice quivering with the emotion he no more cared to dissemble: 'Do you know this person's address?'

'No; but I could find it out, very likely,' answered the garrotter.

'Good.—Now let us be practical. Get me the address, and I'll give you two hundred pounds. Help me afterwards in what remains to be done, without asking questions, and without flinching, and I will give you five thousand, and get you safely off to America at the end of it. That one job shall make a man of you for life.'

'Five thousand pounds! that is a heap of money,' said Bill very slowly, in answer to Lord Ulswater's last speech.—'A heap of money. I belonged to a gang once that broke into a lone station in New South Wales, where there was money said to be hid, and nobody to take care of it but the old farmer and his wife—all the hands being stampeded off to the diggings at Flush Creek. I'd no share myself in beating out the old folk's brains, when they wouldn't give up the tin; but it was done, and the gold found. Our captain and two of our mates got hung for that, down at Burnt Flats Courthouse, and I was sent to the chain-gang. If there's any other way'—

'There is none,' interrupted Lord Ulswater, rather hissing out the words than speaking them. 'Idiot, chicken-hearted dolt that you are! to what purpose is it to tell me your stories of braining wretched misers for the sake of a few sovereigns tied up in a stocking, and then drinking yourselves blind drunk in some grog-store at the roadside, and tattling of the bloody deed—as your thick-skulled comrades did, no doubt—I know what happened as well as if I had been there—till the troopers got wind of the business. This is another affair. I am your captain, now, William Huller, and a better one than the booby who got his worthless neck squeezed, and serve him right, at Burnt Flats Courthouse. Listen! Not to-morrow, but on the

following night, at the same hour, be here, and I will meet you. By that time, you must be acquainted with the address of this Mrs Fletcher—do you hear? After that, I shall know what steps to take. For Marsh, I care nothing. But if that woman has really deceived me—if she is indeed in England, and in London, why, then?—

‘Yes, my Lord!’ said Bill eagerly.

‘Why, then,’ continued Lord Ulswater with a light laugh, ‘it is her life or mine.—Be punctual. And now, good-night to you.’

CHAPTER XXXIV.—WILLIAM MORGAN'S LAST VISIT.

‘I am very sorry,’ said Miss Hastings, looking down at the ground.

The person addressed broke out fiercely in reply: ‘You are very sorry! You have done me a very great, grievous, and bitter wrong, Flora Hastings. You have taken my very life, and hope, and strength away from me, and I care for nothing now, since I have been deceived in you, that I loved very dearly—better than you deserved to be loved—and now I am thrown away like an old glove, and given up, and you are very sorry. Sorry!’ William Morgan sneered very bitterly as he repeated this last word.

‘What can I say?’ exclaimed poor Flora, almost imploringly.

They two were alone together in the morning-room, the walls of which were hung with a gray French paper, on which there was a pattern, sprigs of flowers, in gold and pink, very small and unobtrusive. Fortunatus Morgan will very likely remember the pattern of that paper, and the flowery scroll-work of the Tournay carpet, and the exact position of the furniture, to his dying day, with that strange mechanical recollection which we have of the minutest features of a spot where we have suffered one of those great pains that only come once or twice in a life.

Flora had been crying; the bright drops clung yet to the lashes that fringed her blue eyes as she looked meekly down, as a sinner should. But there was no yielding in her attitude or in her heart. If Mrs Hastings had fancied, as she very possibly did, that perhaps a forlorn-hope might exist of William Morgan's winning back his promised wife in that last interview, it was tolerably evident that she was doomed to disappointment. Flora was really and truly weeping because she had been sincerely sorry for the suffering she had inflicted on the man whom she had never loved, for the sake of the man whom she did love.

As for William Morgan, his face, pale with sleeplessness, livid with anger, was not good to look upon. It was not in human nature that he should philosophically accept his own dismissal, *vice* Lord Ulswater promoted. He had a right to be angry, and he had certainly used, and perhaps abused, that right. He had said sundry savage things, whereof the sample quoted above was but a mild specimen, and his looks, and his manner, and the tone of his voice had added gall to bitterness. He was making himself peculiarly disagreeable, as it was his privilege to do.

‘What can I do?’ asked Flora, rather of herself than of him, as we all sometimes take counsel of ourselves as to what we are to do when things are at a dead-lock.

William Morgan pounced upon the opportunity as an owl swoops upon a mouse. ‘What can you

do?’ he said vehemently. ‘That rests with yourself, not with me. But since you ask, I will tell you. You can be honest; you can keep your word to me; you can be faithful to your pledged engagement and to the man whom you accepted, before the world, as your future husband. This is what you can do, Miss Hastings.’

Flora shook her head, and there were tears glistening, for the second time, on her soft cheek. ‘That is impossible!’ she said—‘quite impossible. I beg your forgiveness with all my heart, and very humbly, I am sure. I would ask it on my knees, if that would move you to grant it to me. But what you say can never be.’

‘Why not?’ demanded William Morgan, in a tone that might have been called threatening, and he clenched his hand as he spoke until the nails were buried in the flesh.

Silence. No answer came to the rude question, and it was repeated, still more rudely. ‘Why not? I have a right to know.’

Flora looked up, wistfully, in her suitor's angry face. Her own eyes swam with tears. ‘Spare me this!’ she said faintly; but there was no relenting in Fortunatus Morgan just then.

‘I have a right to know, from your own lips, the shameful truth,’ he said grimly—‘a right to hear from yourself, and not merely at second-hand, why you have chosen to break faith with me.’

The girl turned to bay. She lifted her tear-stained face, and fronted him boldly, and there was a sudden sparkle of awakening spirit in her eye. ‘You will not spare me,’ she said resolutely; ‘but I have tried to avoid giving you unnecessary pain. I love another man. I cannot break my word, given to him.’

‘Why can you not treat him as you treated me?’ exclaimed Morgan, with quivering lips and a spot of hectic red burning on his pale cheek.

‘Because I do love him,’ answered the girl simply.

The new member for Oakshire turned on his heel with a savage snarl. ‘Jilt!’ he said—‘fickle, heartless jilt!’ The words were flung in the face of the courted and flattered belle of a London season as a stone might have been hurled at an idol.

The hot flush of indignation crimsoned Flora's cheek. ‘You are ill-bred, Mr Morgan, as well as unjust,’ she said. ‘Heartless I was once, no doubt, but that was when I was base enough to accept your proposal. I shall not incur the imputation of heartlessness a second time.’

Miss Hastings was moving towards the door, when the sight of the despair that was written on Morgan's ashen white face stopped and softened her. Women do not like to see a man suffer. It seems sometimes as if they regarded pain as a particular appanage of their own sex; but be this as it may, they certainly sympathise with a man's grief when they can understand the cause of it; not the less so, possibly, when, as in this case, the sorrow and agony, the wrench, and smart, and sting imply a compliment to the cause of so much torment. Flora turned back, hesitating, and Fortunatus Morgan saw and mistook her hesitation and its purport. In a moment he was beside her, and had her hand grasped between both of his. He gazed at her with eager eyes, bright with the light of hope. ‘Flora, dear Flora, you cannot, at the last, bring yourself to do this cruel thing—to be false to me. Let all be forgotten, and let us be to each other as if this misery had never been!’

She to whom William Morgan spoke trembled very much, and changed colour. It was piteous to hear this appeal, and to be obliged to answer it with the cold, hard monosyllable, No. It was sad to see the light of fresh joy and expectation shining in the young man's haggard eyes, and to have to quench it. But though she shrank from doing this, it was with no change of purpose, but merely as a young surgeon, unsteered by habit, shrinks from cutting deep into the sentient flesh of the living fellow-creature that lies waiting for the plunge of the knife. Still he mistook her silence, and went on, hurriedly, in broken words, to talk of his own past wretchedness, to assure her of his forgiveness, to build up cloud-castles for the happy future. She felt that this must be stopped, but ah! what a pang did it cost her to speak out too clearly for any misunderstanding to endure!

'It cannot be as you say,' she uttered the words feebly, but with a great effort. 'I will be your friend, your sister, if you will let me, but not your wife. I belong to Lord Ulswater. I am grieved to give you this pain.' But here William Morgan flung away her hand, which till now he had held tightly between his own, and with a curse, horrible to hear from the lips of any man, but doubly horrible when coming from this cold, prim favourite of fortune, turned away, and hid his face. A minute, two minutes, three minutes, went dragging by, every second duly measured and recorded by the ticking of the pretty Paris clock on the mantel-piece. Those three minutes, to the man standing there with his face hidden in his hands, clenching his teeth hard to keep down the sobs that sought to betray the sorrow within him, were three very long minutes indeed.

Flora, looking on the suitor she had discarded, stood silent and embarrassed. To pity him and to pardon his violence, that was an easy task; but to say a single word that should not make matters worse, that was less easy. It was one of those cases in which the wisest policy is a masterly inaction. After a long pause, Morgan uncovered his ghastly face, and, with his right hand closed as if it grasped some imaginary weapon, took three or four quick strides through the room, turned, and walked back to the place where Miss Hastings stood. 'I have been rude,' he said, in a slow, stammering tone, like that of a child that recites a lesson half learned—'very rude, and I beg you to forgive me. I shall not annoy or trouble you any more. It is over now, my dream, and I must live on alone.'

'I hope, indeed I do, that you will be happy,' said Flora earnestly—'that you will really forgive me from your heart, and forget me; and that when you find some one more fitted to be your wife than I, you'—

He interrupted her by a low, half-articulate utterance of mingled wrath and suffering, and his lips actually writhed as they shaped themselves into a smile such as it was sad to see. 'Let us avoid common-place talk of that sort,' he said roughly; 'mawkish platitudes are thrown away in such a case as this.' He turned upon his heel as he spoke, and again paced the room, repeating the same action with his closed right hand, as if it grasped a dagger that he was about to plunge into some hated heart. Miss Hastings stood embarrassed, eyeing him with pity, not quite, perhaps, unmixed with fear. Fear! It seemed so strange, so ridiculous, to connect the idea of fear with William Morgan! No one, unless it were his sister Ruth, whom her

great love for him and need of his continued affection had rendered timid, had ever entertained any apprehensions of what the Croesus of Cramlingham might do. He had been but a milksop, boy and man. The very servants, agents, and hangers-on, of whom he had so many, and whose bread depended on his caprice, were not afraid of him. The small boys who were his fags at Eton had cared no more for him than the Ironsides of Oliver Cromwell cared for his meek Highness, My Lord Protector, Richard. There are some men who naturally inspire a certain amount of terror even in those over whom they have no authority, just as there are others who might have the pomp and pride of power, the purple, the fasces, the lictors, and yet scare nobody—lamb in lions' hides. The Right Honourable Robert was a type of one of these classes; the M.P. for Oakshire of the other.

All was changed in him now—in this tame inheritor of the wealth that a strong hand had clutched—in this poor prig, whose religion it was to be a gentleman, according to his narrow standard of what a gentleman should be. The great alchemy of pain made him, for the moment, another man. Flora Hastings, as she saw him now, pacing the room with hasty and uneven strides, pale, furious, haggard, with his fingers working as if they closed upon the haft of a poniard, felt some fear mingling with her womanly pity. What might he do that was harmful, to his wretched self or to others, unless this desperate mood should burn itself out? The very rudeness and abruptness of his speech was doubly startling from one who had been the incarnate genius of commonplace, but who revolted against commonplace now, in his suffering and his despair. William Morgan, thus lashed by the Furies, was not good to look upon. He was in that fever of the blood and restless rage of the mind in which great crimes are done. The ruthless deeds that are chronicled in the records of our assize courts are not seldom prompted by jealous frenzy and spite, such as those which stung him. But these are the work of untaught or half-educated men, not of those who have gone through the steady discipline and long training which had fallen to the lot of the owner of Cramlingham and the new knight of the shire. It is not too much to say that his education it was which saved William Morgan from doing some act of violent despair; and it may well be that Flora never knew how very near to death she, in her youth, and health, and bloom of beauty, had been on that day.

He went, at last, with scanty leave-taking, refusing to touch the hand which the girl held out to him in sign of reconciliation, closing the door with a hasty slam that echoed through the house, and crossing the entrance-hall with a hurrying step. In the hall, he met Mrs Hastings, and she would have detained him, but he passed her without a word, and went out, making his way towards the outer gate. Mrs Hastings, from a window that overlooked the grounds, saw the young man, sullen and ghastly of mien, pass on towards the road, his hat pulled down over his brow; and the reckless misery of his whole aspect moved her somewhat to compassion for him as well as for her own disappointment.

'It is all over now, mamma,' said Flora softly; 'he will come no more.'

Mrs Hastings gave a little sigh. 'Ah! well,' she

said, reluctantly acknowledging the truth, 'I suppose that when Lord Ulswater calls, he must be let in.'

THE MONTH:

SCIENCE AND ARTS.

It has been often remarked, that in science as well as in art and mechanics, there is a rush for a time of discovery or of new applications of known principles, in one particular direction. This appears to be true at present of electro-magnetism, for scientific periodicals have been giving particulars of machines and apparatus by which this wonderful agent can be turned to account and made to work in ways never before thought of. We need not repeat here what we have mentioned in a former *Month*; but we must notice an application of electro-magnetism to manufacturing purposes which is now talked about, and which by many persons will perhaps be considered the most remarkable of all. Certain ingenious iron-smelters at Sheffield have contrived a plan by which they send a stream of magnetism through the molten metal in their furnace, and the iron so treated is said to be made in a shorter time than by the ordinary process, and to be much better in quality. The magnet used in the process is a fixed bar-magnet excited by a Smee's battery; and the stream of magnetism thereby produced passes into the red-hot metal through an opening in the side of the furnace. Persons who have witnessed the operation say that the effect on the iron is to make it heave and bubble, while impurities are thrown off which are retained in iron made in the usual way.

This general description is all that, as yet, has been made public of this interesting subject, but further particulars may be expected shortly. Enough, however, is known to indicate that we are on the eve of important changes in the manufacture of iron, and of applications of magnetism in the mechanical arts of the most surprising nature.

In a paper published by the Meteorological Society, Mr Bloxam proposes a theory to account for some of the phenomena of terrestrial magnetism—namely, that they are occasioned by the difference in the hygrometric condition of different parts of the globe. Active evaporation, he explains, in one hemisphere, and active condensation in the opposite hemisphere, would each intensify the horizontal force. The southern hemisphere may be regarded as a region of evaporation, owing to the great extent of sea and small extent of land there; and the northern hemisphere must be relatively a region of condensation, owing to the great extent of land and the small extent of sea there. In consequence of these relative conditions, heat will be conveyed from south to north; and the conditions being permanent, will account for the same end of the magnet always pointing towards the same pole of the earth. The more condensation converges northward, and the more evaporation converges southward, the greater will be the intensity of the horizontal magnetic force; but evaporation is perhaps much more influential in producing magnetism than condensation. We give this brief summary of Mr Bloxam's theory, in order that it may be examined and criticised as widely as possible.

A method of ventilation has been tried in a large public establishment, the Almshouse, at Philadelphia, which deserves consideration, as it appears to have effectually accomplished the end proposed—the complete removal of foul air. An opening is made at the level of the floor in the wall of a room or ward in the position usually occupied by the fireplace, at which heated air is made to flow in. Near this, also at the level of the floor, two other openings are made connected with a flue, to serve as outlets. The warm air on its entrance naturally rises, but finding no escape at the ceiling, it accumulates in the upper part of the room, and forces downwards the air which, having been longest in the room, is comparatively cool. This at length is compelled to escape by the two outlets above mentioned, and thus there is a complete circulation and displacement of the whole mass of air in the room. Even in the most crowded wards, the air was so thoroughly freshened by this method, that not the slightest offensive odour could be detected; and an effectual check was given to the fever and cholera which had broken out in some parts of the building. The merit of this method appears to consist in a reversal of the usual practice, which is to place the outlets at the ceiling: if so much good can be effected by placing them at the floor, we should be glad to hear of a trial made in some large establishment in this country.

The making of wool from the foliage—if such it may be called—of fir-woods and pine-forests has at length been brought to a satisfactory conclusion. For particulars of the process by which the needle-like vegetation is converted into a woolly fibre, we refer to the article *Wool from Pine Trees*, published in this *Journal* in 1852. It attracted some attention at the time, and then seemed to be forgotten; but in Austria and Silesia, the experimental process has grown into one of manufacture. At a factory in Breslau, pine-tree wool is now spun and woven into a kind of flannel, which is largely used as blankets in hospitals, barracks, and prisons, in that city and in Vienna, with manifest advantage, for pine-wool drives away all disagreeable and noxious insects from the localities in which it is used. It can be used as stuffing for chairs, sofas, and mattresses in the same way as horse-hair; and some qualities are woven into a kind of cloth of which garments of many kinds can be made. It is said to be favourable to health as well as to cleanliness. The waste liquor from the pine-vats yields a valuable medicine, and from the waste fibre, gas is manufactured to light the factory.

The Agricultural Society of Compiègne are endeavouring to raise by subscription a sum of one hundred thousand francs, to offer as a prize for the best system of mechanical cultivation; that is, for machines which will supersede hand-labour in the work of a farm. There is much necessity for something of the sort in France, for the population of that country has rather decreased than increased for some years past, and as the large standing army takes away thousands of men from useful productive labour, the scarcity of hands is thereby aggravated.

The important discovery made by Dr W. B. Richardson, that parts of the body can be rendered insensible to pain at the will of an operator, has been introduced into veterinary practice, and with such success that henceforth we ought to hear no more of horses being tortured by operations. This

'local anæsthesia,' as it is called, is produced by directing a shower of ether spray on the part affected from an instrument which acts as a fountain throwing off the finest of dew. In a short time after the instrument has been let to play on any part of the head, body, or limbs, all feeling ceases in that particular spot. During a lecture recently delivered, Dr Richardson deadened portions of his arm, into which a brother-physician thrust large needles without occasioning the least pain. The importance of this discovery will be obvious; for the risk incurred by rendering the whole body insensible is avoided, and the most painful operations can be performed as insensibly to the patient as under the complete influence of chloroform. And the results obtained on the human subject are obtained also in horses, as has been made clear to the Society for the Prevention of Cruelty to Animals. Veterinary surgeons have used Dr Richardson's process to render the parts insensible, and have cut out tumours, put in setons, made deep incisions to get at internal obstructions without pain to the horses. In cases of local inflammation, whether in the human subject or in animals, the ether spray affords such a ready means of alleviating the pain and abating the attack, that it cannot fail to be adopted. We see by advertisements in the public journals, that in recognition of the value of Dr Richardson's discovery a testimonial is to be presented to him by the medical profession.

A method of inverse filtration has been brought out in Philadelphia, which under some circumstances would be more useful than the direct way as at present practised. It may be thus described: cover the mouth of a funnel with a piece of calico or muslin, and plunge the funnel with the mouth downwards in the vessel of liquid to be filtered. To the stem or neck of the funnel, which is then uppermost, attach an india-rubber tube, whereby the whole is converted into a syphon, through which the liquid, after rising through the muslin, flows rapidly, leaving the impurities behind.

Petroleum lamps have lately come into use, but many persons object to them because of the frequent breaking of the glass chimneys. In halls, passages, and other places exposed to draughts of cold air, the loss of chimneys constitutes a serious item of expense. Oil of petroleum radiates so powerful a heat as to occasion the fracture of the glass on a lowering of the temperature. A means of obviating this loss has been tried in Germany with success: it consists in a double chimney, the outer one being very slightly larger than the inner, and both resting on the same base. If the outer one receives a chill, the film of air between the two, thin though it be, prevents the transmission of the shock, and the inner one remains uninjured. In this way the brilliant light of petroleum can be economically used; but it is worth mention, that in sitting-rooms where the temperature is uniform the breaking of chimneys but rarely occurs.

Among recent American inventions is a photographic cigar-holder. It is cleverly made of paper and quill, and is ornamented with a blank medalion, which, however, becomes filled with a photograph when the holder is used by a smoker. The heat of the smoke develops the picture, but in what way has not yet been made known. The cost of the article is trifling, and it affords a curious instance of the uses to which photography may be put.

TO ITALY.

HAIL! all hail, thou fair Italia! thou that erst didst lead the van
In the onward march of nations, ere *our* Northern course began!
Hail to Europe's loveliest daughter, emerald-vestured, sapphire-skied,
Bright enthroned 'midst purple vineyards, Alpine-browed and sunny-eyed!
O'er the grave no longer mourning where thy storied greatness lies:
Gazing on th' impassive peoples round with wo-seared, haggard eyes.
Lo! the glorious sun of Freedom bursts upon thy night at last;
And before thee spreads a Future which shall cancel all the Past—
All that Past which saw thy cities bristling fierce with foreign steel,
Heard thy sacred soil reverb'rate 'neath the alien's armed heel!
Thou, majestic in thy sorrow, stately in thy grand despair,
While the ravening Croat gloated o'er thy charms with wolfish glare.
Now at last hath new-born Freedom wakened all the land around,
And thy hills and caves re-echo Liberty's enlivening sound:
From those lofty Alpine regions, reverend with th' eternal snows
Which a thousand, thousand winters on their hoary heads impose;
Through those laughing sun-kissed valleys, purple with their trellised vines,
Over which, like giant warders, frown the arid Apennines:
From that fair and stately city, cushioned on the ocean's breast
Like some sea-bird, weary-pinioned, floating o'er the billows' crest;
To that southern island-mountain from whose caverned craters flow
Lurid smoke and liquid fires, that through the midnight darkness glow.
Now let Peace, and Law, and Progress reign with uncontested sway,
All thy fervid soul rekindling 'neath their mild and genial ray!
In the ranks of kindred nations, strive a foremost place to find;
Seek the welfare of thy people in the weal of all mankind!
This shall blazon forth thy story with a lustre more sublime
Than of old it bore when beaming brightest on the disc of Time:
When beneath thine ancient virtue rose a realm without a bound,
And th' unconquered Roman eagle, with a blaze of glory crowned,
Stood with crest erect, undaunted, and with empire-reaching wings,
With her grasp upon the nations, and her foot upon their kings.

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